CURRENT LITERATURE
IN
AGRICULTURAL ENGINEERING
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ENGINEERING

Vol. 5, No. 8. WASHINGTON, D. C. March, 1936.

Agricultural Engineering.

Agricultural engineer - technician or engineer. An agriculture to fit the tractor. By Harold E. Pinches. Agricultural Engineering. v.17, no. 2. February, 1936. p.65-66. Engineer's peculiar job, in any field, is to discover functions, make use of them, modify and control them in organization and execution of progressive plan of attack on given problem. Problem as agricultural engineers is that of agricultural production.

Agriculture.

How science helps agriculture. Utah Farmer. v.56, no.14. February 25, 1936. p. 6, 10.

Let us face farm facts squarely. By L. F. Livingston. New England Homestead. v.109, no.2. January 18, 1936. p.4, 9, 22-23. Sore spot in our agricultural system is fact that 65% of our farmers receive only 20% of farm income. In terms of 1935's income, this was only about $70 apiece for some 19,500,000 persons.

Air Conditioning.

New uses for the psychrometric chart in simplifying air conditioning problems. By William Goodman. Heating, Piping & Air Conditioning. v.8, no. 2. February, 1936. p.87-90, 92.

New uses for psychrometric chart in simplifying air conditioning problems. By William Goodman. Heating, Piping & Air Conditioning. v.8, no.3. March, 1936. p.147-150. Part 2. Shows use of method in determining required state of air supply to meet given room conditions, and conditions which can be maintained with given air supply.

Alcohol Fuel.

Farm alcohol as motor fuel is promotor's dream. National Petroleum News. v. 28, no. 6. February 5, 1936. p. 343-344. Production of alcohol from a bushel of corn would not be over 2.5 gallons to bushel under most favorable conditions of distilling, authorities say. At present wholesale prices for gasoline, and after taking out cost of distilling corn into alcohol, amount remaining to farmer for growing corn based on today's motor fuel prices, would be mere pittance. If distillation of farm products into alcohol were subsidized to a point farmer could receive anything like a reasonable amount for his corn for this purpose, cost of motor fuel would have to be greatly advanced, and farmer himself would pay much more for his motor fuel to operate his cars and other farm equipment operating on gasoline. Table gives displacement of gasoline by alcohol in Europe.

Alcohol Fuel. (Cont'd)

Oil versus alcohol economically considered. International Sugar Journal. v.37, no. 441. September, 1935. p.332-333. In spite of widespread adoption in certain countries of alcohol or alcohol-petrol mixtures for motive power, it is claimed that cost of production is very much greater than cost of importing equivalent quantity of petrol and that there is no sign of industry ever becoming economic; it is only maintained by incidence of heavy protective duties.

Technical economic aspects of alcohol problem in Cuba. By F.Guerrero. Facts about Sugar. v. 30, no. 6. June, 1935. p. 228. Annual consumption of gasoline in Cuba is about 40 million gallons, valued at $4,800,000. If it were required that gasoline consumed in country should contain 50 per cent of alcohol, Cuban foreign exchange would benefit by something more than $2,000,000. Under present quota and market conditions 100 million gallons of molasses produced in Cuba is worth $4,000,000. At least half of all molasses would be required to make required 20 million gallons of alcohol, and such conversion would mean financial loss to country. On other hand, it is entirely practicable and desirable to produce necessary alcohol direct from cane juice; there is plenty of cane land available for which no use is now possible. Author calculates that motor alcohol can be produced from cane juice for 9 cents a gallon including all expenses; this is distinctly under present average import price of 12 cents f.o.b. Cuban port.

Alkali Land.

Alkali land grows beets. Sugar. v.30, no. 6. June, 1935. p. 229. In recovery program first step was to cut drainage ditches to sloughs leading to sea. Land is from 8 to 40 feet above sea level and there is little surface drainage. Various preparatory crops were planted, including grain, alfalfa, and sour clover. Some of first plantings of sugar beets returned as little as 2.5 tons to acre, and many acres did not respond to drainage at first. Steady advance was made, and in many of fields yields of beets now run above 15 tons to acre.

Barns.

Before building a barn. Hoard's Dairyman. v.80, no. 19. October 10, 1935. p.460. Tried and proved pointers.

Cow stables I have seen. By Ormand H. Mann. Utah Farmer. v.56, no. 14. February 25, 1936. p.13. In conclusion I wish to sum up the advantages of ventilation: 1. Elimination of moisture from stable. 2. Better working conditions in stable. 3. Increasing health of animals. 4. Less depreciation of barn structure. 5. Greater milk production. 6. Elimination of draft on cows.

Building Construction.

Helps to successful contracting. By Harry O. Locher. N.Y., McGraw-Hill Book Company, Inc., 1934. 222p.

Building Construction.

Home building service plan. Federal Home Loan Bank Review. v.2, no.6. March, 1936. p.199-200.

Wood trusses. Pencil Points. v.16, no. 11. November, 1935. p.589-596.

Cotton and Cotton Ginning.

Extension of an old practice in cotton culture. By J.G. Brown. Cotton and Cotton Oil Press. v.37, no. 2. January 11, 1936. p.3-4.

Farmers demanding better ginning. By Orville Adams. Cotton and Cotton Oil Press. v.36, no. 44. November 2, 1935. p.3, 13. Sample chief element of competition.

Government control of cotton production in the United States, 1933-1935: Selected list of references. Washington, D.C. 1936. 59p. U.S. Department of Agriculture. Bureau of Agricultural Economics. Agricultural Economics bibliography no. 63.

Dairy Farm Equipment.

Comparative efficiency of farm milk coolers. By G.H. Wilster and others. 1934. 42p. Oregon. Agricultural Experiment Station. Bulletin no. 331. Points considered: (a) Cooling efficiency; (b) Bacterial contamination of milk by different types of milk coolers; (c) Influence of different methods of cooling on the flavor and odor of milk; (d) Influence of different methods of cooling on the creaming ability of milk.

Milk cooler is simple. By Ben Gawley. Idaho Farmer. v.53, no.24. November 28, 1935. p.9. Principle of this cooler is simple. It consists of three graduated pans, set one within the other, and surrounded with chopped ice and salt. Milk runs into second pan, filling space between first and second pans. First pan is filled with salt-ice mixture. These two pans set into large wooden bottom tray, which, like uppermost pan, is filled with chopped ice. Thus when milk runs into cooler, it has ice-cooled surfaces to run between. Bottom tray should be made of wood, for it holds cold best. This tray is 30 inches long, 17 inches wide and 3 inches deep. Two short blocks 1 x 1 x 12 inches, hold milk pans away from bottom of wooden tray to allow for ice space for cooling undersurface of bottom milk pan. Bottom milk pan is 24 x 11 x 4 inches. Upper end is furnished with wide mouth to receive milk as it runs from surface cooler. Other run has spout six inches long and inch in diameter located near top, so that pan will completely fill before beginning to empty. Upper milk pan is made with measurements slightly less than lower pan it fits into. Around its rim is half-inch projection over edge of under milk pan. This is to keep any salt or ice from falling into milk. Pans made to these measurements will hold nearly four quarts before milk begins to flow from spout. This gives plenty of time to cool

Dams.

Large dams in the United States. Reclamation Era. v.26, no.2. February, 1936. p.50-51. In accompanying table only earth or rock-fill dams having volume of 1,000,000 cubic yards or over, and concrete masonry dams of 500,000 cubic yards or over are listed.

Sautet dam - highest dam in France. Reclamation Era. v.26, no.2. February, 1936. p.52.

Shaky dam tied down with steel cables. Engineering News-Record. v.116, no.8. February 20, 1936. p.286. Vertical anchor cables extending through masonry from crest to foundation restores wall strength of weak cross-section of Cheurfas Dam in Algeria.

Ditching.

Laying tile by machinery. By W.E. Wiecking. Hoard's Dairyman. v.80, no. 19. October 10, 1935. p.464.

Drainage.

What drainage has accomplished. By Lewis A. Jones. 1935. 3p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Dynamometers.

Nomographic chart for the Iowa dynamometer. By June Roberts. Agricultural Engineering. v.17, no.2. February, 1936. p.68-69. Chart is especially valuable for field work, and by it we can convert dynamometer readings into pounds pull and time in seconds into miles per hour, or miles per hour into time in seconds. Both pounds pull and time in seconds can be converted into their horsepower value.

Electricity in the Home.

Electrification for low-income house. By Henry L. Logan. Architectural Record. v.79, no.2. February, 1936. p.121-125.

Electricity on the Farm.

Engineering phases of REA program. By W.E. Herring. Agricultural Engineering. v.17, no.2. February, 1936. p.63-64.

New light on the farm problem. By T.C. Richardson. Farm & Ranch. v.54, no.24. December 15, 1935. p.3, 7. Electrification is being realized at accelerated rate.

Progress in rural electrification. By John E. Rankin. Southern Agriculturist. v.66, no.1. January, 1936. p.7, 14.

We planned ahead to make full use of electricity. By Clyde Estabrook. New England Homestead. v.109, no.1. January 4, 1936. p.3, 11. Paid to study its possibilities and prepare for future expansion.

Electricity on the Farm. (Cont'd)

Will rural Southwest electrify? By M. L. Ramsay. Farm & Ranch. v.54, no. 23. December 1, 1935. p.2, 25. Many sections where practical and economical use may be made of this kind of power.

Erosion Control.

Contour farming increases yields. By Ivy M. Howard. Farm & Ranch. v.54, no. 23. December 1, 1935. p.4. Increased yields were due to conservation of moisture by contour ridges. Terrace doubled depth of penetration, yet contour ridges without terraces conserved more water than terraces without contour ridges. Terraced land had penetration of 16.04 inches. Land terraced and ridged on contour had greatest penetration very little, less than one-half inch in experiment. Contour chiseling caused increase in penetration of 5.49 inches. In addition to conserving moisture and checking soil losses, contour farming has another important advantage in reduction of cultivation costs. Much less power is required than for farming up and down hill.

Don't let water and wind steal your richest soil. By A.F. Gustafson. The Furrow. v.41, no. Jan-Feb. 1936. p.4, 12.

Dust bowl. By Ben Hibbs. Country Gentleman. v.106, no.3. March, 1936. p.5-6, 83-87.

Maps show erosion control. Washington Farmer. v.61, no.4. February 20, 1936. p. 11. Erosion survey maps, really inventory of soil conditions from standpoint of erosion control, made from extensive reconnaissance in summer of 1934, define three principal types of land use; agricultural land, forested land and grazing land. Reduced to county scale surveys list kind of erosion, intensity of erosion, present land use and recommended land use for erosion control. According to maps, lands severely eroded by wind must be withdrawn from cultivation and seeded to grass. Other areas seriously eroded by water and wind and susceptible to increasing damage must have all critically eroding land withdrawn from cultivation and seeded to permanent forage crops. Grain rotated with grasses, together with improved tillage practices, must be adopted on lands remaining in cultivation. Strip farming or strip seeding is recommended where adaptable.

No more straight furrows. By Frank Thone. Science News Letter. v.28, no. 765. December 7, 1935. p.364-366.

Vine-mesquite for erosion control on southwestern ranges. By Barnard A. Hendricks. 1935. 8p. U.S. Department of Agriculture. Leaflet no. 114.

Fans, Mechanical

Airfoil fan characteristics. By W.A. Rowe. Heating, Piping and Air Conditioning. v.8, no. 2. February, 1936. p. 112-118.

Farm Buildings and Equipment.

Building boom ahead. The Farmer. v.54, no.2. January 18, 1936. p. 7, 21.

Provided paddocks for proved sires. By S.A. Witzel. Hoard's Dairyman. v.80, no. 19. October 10, 1935. p.463. Gives cost figures for material for paddock 20 x 46 with breeding stall and gate.

What share of income to farm buildings? By R.C. Miller. Engineering Experiment Station News, Ohio State University. v.8, no.1. February, 1936. p.28-29.

Farm Machinery and Equipment.

Care and repair of mowers and binders. By W.R. Humphries. 1936. 21p. U.S. Department of Agriculture. Farmers' Bulletin no. 1754.

Do your machinery fixing early. By E.T. Leavitt. Utah Farmer. v.56, no. 14. February 25, 1936. p. 11.

Farm equipment research and testing stations in Europe. By J. Brownlee Davidson. Agricultural Engineering. v.17, no. 2. February, 1936. p. 75-76, 84, 88. Three things we should consider most seriously to improve our institutions: 1. Seek more cooperation and coordination between public research institutions. 2. Develop and define relationships between manufacturers and public research institutions dealing with farm equipment. 3. Establish relationship of public research institutions to agricultural public on sound principles of best service.

Farmers keen to cut cost of production. Utah Farmer. v.56, no. 14. February 25, 1936. p. 8.

Get the machinery ready. By E.T. Leavitt. Oregon Farmer. v.59, no. 3. February 6, 1936. p. 10. Check up and repair equipment before it is needed.

Harvesting canary grass seed. Hoard's Dairyman. v.81, no. 2. January 25, 1936. p. 39.

How machinery can be used in mixed farming. Implement & Machinery Review. v.61, no. 730. February 1, 1936. p. 904-907. Suggested new technique - Changed ideas on rotations - Value of grass.

Machine for sawing ice. Wisconsin Agriculturist. v.63, no.2. January 18, 1936. p. 14. Gives plans.

Maintain farm machinery efficiency. By Roy C. Sheeler. Farm & Ranch. v.54, no. 23. December 1, 1935. p.17.

Novel method of Ridge-cultivation. By A.L. Deal. British Sugar Beet Review. v.9, no. 6. February, 1936. p. 177-178.

Sidelights on 1935. Farm Implement News. v.57, no. 4. February 13, 1936. p. 32-33.

Farm Machinery and Equipment. (Cont'd)

Some farm machinery developments observed in Europe. By G.W. McCuen. Agricultural Engineering. v.17, no. 2. February, 1936. p. 70-74. Grass harrow. Storage and stacking. English combining. Potato diggers. Tractor plows of German manufacture proved to be quite similar in design to American plows. Large percentage of German-built tractors are using low-pressure pneumatic tires. Tremendous impetus is being given to rural electrification in European countries.

Winter care of equipment. By I. W. Dickerson. Pennsylvania Farmer. v. 114, no. 4. February 15, 1936. p. 15.

Fertilizer Placement.

Fertilizer placement for cannery peas. By Charles B. Sayre and G.A. Cumings. 1936. 30p. New York. Agricultural experiment station. Bulletin no. 659.

Fertilizer Spreaders.

Let the spreader earn your taxes. By E.T. Leavitt. Hoard's Dairyman. v.81, no. 2. January 25, 1936. p. 37.

Flax.

Imperial Valley adopts flax. By Charles H. Saylor. California Cultivator. v. 83, no. 2.

Flow of Water and Gases.

Simplified pitot tube calculations of air flow in ducts and pipes. By Chas. A. Bennett. 1935. 4p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Forage Drying.

Absorptive agent for drying grain. By W.M. Hurst and W.R. Humphries. Agricultural Engineering. v.17, no. 2. February, 1936. p. 62. Table gives absorption of moisture from grain by a chemical dryer.

Foundations.

Foundations for low-income house. By Sheldon D. Werner. Architectural Record. v. 79, no. 2. February, 1936. p. 108-109.

Fruit Storage.

Fruit storage research. Cold Storage & Produce Review. v.39, no.454. January 16, 1936. p. 14, 22. Precooling and CO_2 concentration tests.

Fuels.

Home gas supply is generated by burning waste. Popular Mechanics. v. 64, no. 6. December, 1935. p. 892. It is individual gas-making

Fuels. (Cont'd)

plant that distills refuse, wood, paper, corncobs, straw - anything that burns - and produces smokeless gas that can be piped from basement storage tank to kitchen stove, refrigerator, radiators, lights, washing machine and power plant. Economical in its fuel consumption, it can turn two tons of farm waste or one cord of wood into gas sufficient for nearly three months of home use. Generator consists of alloy metal retort in semi-steel furnace, gas purifier, steel storage tank, pipes, valves and gauges.

Ignition and combustion of Diesel fuels. By G.D. Boerlage amd J.J. Breeze. Power Plant Engineering. v. 40, no. 3. March, 1936. p. 165-166. Discussion of recent developments and tests before the annual meeting of the A.S.M.E.

Petroleum on farms of the U.S. National Petroleum News. v. 28, no.6. February 5, 1936. p. 130-131, 133, 135, 137, 139, 141. Drives over a million tractors, which, in turn, supply power to other labor saving machinery in the fields; lights 85 per cent of farm homes and serves in numerous other ways.

Oil for heating and in kitchen stoves makes work easier in millions of homes. National Petroleum News. v.28, no. 6. February 5, 1936. p. 161, 163, 165.

Greenhouses.

Greenhouse building may be revolutionized. Oregon Farmer. v.59, no. 3. February 6, 1936. p. 14. Development that may change greenhouse construction and practice radically is heat-insulated greenhouse, floor, walls, ends and one side of roof of which are made of heat insulating materials without windows. In other side of roof there is single row of sash, and interior walls and roof are painted white to take advantage of all light entering. Three hundred-watt lamps in dome type reflectors, and controlled by automatic thermostat are used for double purpose of heating house and supplementing daylight, and lamps are only heat sources used. Such construction is more economical than conventional, and has advantage of not requiring heating plant. Operating cost is comparable with that of stove-heated ordinary greenhouse, and maintenance is considerably less. Plants are brought to bloom sooner, their quality is higher, and there is better control of parasites. With heat-insulated greenhouse it may be possible to predict almost to day blossoming time of any plant and to bring about blossoming on order.

Heating.

Fuel savers that pay for themselves. Popular Mechanics. v. 64, no. 6. December, 1935. p. 820-823, 142A.

Investigation of the use of gaseous fuel in warm-air furnaces. By R.B. Leckie. 1934. 47p. Indiana. Engineering experiment station. Research series no. 48.

Not too hot nor too cold. By Hobart Beresford. Idaho Farmer. v.53, no.24. November 28m 1935. p. 10. Regulation increases heating system's value and safety.

Horses.

Draft horse. By C.F. Curtis. Successful Farming. v.34, no. 3. March, 1936. p. 14-15, 46-47.

Reduction in number of horses on farms. Farm Implement News. v.57, no. 5. February 27, 1936. p. 20. At beginning of present year Uncle Sam's counters of farm animals found 11,637,000 horses and 4,685,000 mules on American farms. Number was 224,000 horses and 137,000 mules fewer than on Jan. 1, 1935.

Hotbeds.

Hotbed is first step in insuring an early garden. Oregon Farmer. v. 59, no. 2. January 23, 1936. p. 3, 14. Gives diagram illustrating arrangement of electric hotbed, including heating cable and regulating thermostat.

Houses.

All-wood houses by machinery. American Forests. v.41, no. 7. July, 1935. p. 326-327. Responding to the need for cheaper housing, the Forest Products Laboratory develops a prefabricated house for quick mass production.

Cost study: for low-cost house for family of four. Architectural Record. v. 79, no. 2. February, 1936. p. 114-120.

Fabricated housing. Letter from Corwin Willson. Mechanical Engineering. v. 58, no. 2. February, 1936. p. 127.

Housing research at Purdue University continues rapid progress. Engineering News-Record. v. 116, no. 8. February 20, 1936. p. 276. Project represents first attempt on part of private industry to make critical study of building construction methods, materials, planning and costs, in so far as single-family houses are concerned. It has been aim to undertake work in exactly same manner as would be done by scientifically minded individual owner. Maximum cost limit of $5,000 was established. First nine houses demonstrate use of wood, brick, steel, reinforced concrete, prefabricated units, Haydite block, wood frame and stucco, steel frame and Rostone. While field work has been going on studies have also been made on what housing should cost from standpoint of consumer. Third study relates to possibilities of cost reduction, and preliminary results are discouraging. In materials, great share of cost is represented by distribution charges; no reduction in these appears possible short of complete revolution engineered through combined efforts of entire building industry. Manufacturing costs are also not capable of being reduced very much. Furthermore, while hourly wage rates are high, annual earnings are very low, so that labor-cost reductions are difficult. Most new developments in housing, it is found, look to providing better product at extra cost, rather than reducing cost of existing materials and equipment.

Low-cost house. Architectural Record. v.79, no. 2. February, 1936, p. 81-86.

Houses. (Cont'd)

Low-cost housing research at Purdue University. Architectural Record. v.79, no.2. February, 1936. p. 142-144.

Modern home. By H.E. Wichers. Successful Farming. v.34, no. 3. March, 1936. p. 11-12.

Standards for low-cost house. Architectural Record. v. 79, no. 2. February, 1936. p. 87-103.

Ice Wells.

Ice wells good investment. Hoard's Dairyman. v. 81, no. 2. January 25, 1936. p. 38. On well-drained site convenient to milk room and water supply, hole was dug approximately 9 feet square and 9½ feet deep. Small to medium sized stones were placed in bottom to a depth of 1½ feet. Two by four studding were placed two feet apart against earth walls. Cheap unmatched lumber was nailed to studding, giving ice storage space approximately 8 feet square and 8 feet deep. A small structure was built over well, floor in sections to facilitate removal to allow free circulation of cold air when freezing ice block in winter. On arrival of cold weather, water is sprinkled on stones until solid bottom of ice gradually freezes in well. Snow and water may be used at start if snow is available. Freezing bottom of ice chamber cannot be rushed as adding too much water at one time will melt thin layer of ice on bottom and allow water to escape through stones.

Insulation.

Heat insulation. By Harvey B. Lindsay. Ice & Refrigeration. v. 90, no. 3. March, 1936. p. 194-196. Ability of insulating materials to retard flow of heat. Conduction and convection two normal methods of heat travel. Theory of contained specific surface resistances. Effect of moisture upon insulating materials. Hygroscopic and non-hygroscopic insulants. Test illustrates effects of moisture entry.

Insulation. By Harold L. Alt. Domestic Engineering. v. 147, no.2. February, 1936. p. 68-70, 152-154.

Insulation for low-cost house. Architectural Record. v. 79, no. 2. February, 1936. p. 110-112.

Irrigation.

Effective portable spray irrigation layout. By F.E. Staebner. 1935. 6p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Portable sprinkling irrigation from a train of sleds. By F.E. Staebner. 1935. 6p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Irrigation. (Cont'd)

Wheat without irrigation. By E.R. Parsons. Western Farm Life. v. 37, no. 8. August 15, 1935. p. 11. Century of production with limited rainfall shows value of fallow on plains.

Lighting.

Electricity lights the way. By Morris L. Cooke. Hoosier Farmer. v. 21, no. 2. February, 1936. p. 11, 19, 29.

Light up! By Mrs. Grace Watkins Luckett. American Agriculturist. v. 133, no. 1. January 4, 1936. p. 20, 23.

Lubrication.

"Alloy" oil promises changes in motoring upkeep costs. Science News Letter. v. 29, no. 772. January 25, 1936. p. 52. Alloy oil consists of 99 per cent petroleum and one per cent of chemical relative to phosphoric acid. Significance is attached to successful development of "alloy" oil which obtains strength without sacrifice of any other essential lubricating qualities, for reason that sharp reduction in engine wear effected by new oil may permit important changes in motor design and possibly use of new metals.

Lubrication of small compressors. By Allen F. Brewer. Cold Storage & Produce Review. v. 39, no. 454. January 16, 1936. p. 5-6, 12. Problems involved with different refrigerants.

Lumber.

Some facts and fallacies concerning lumber. By E.G. Wiesehuegel. Engineering Experiment Station News, Ohio State University. v. 8, no. 1. February, 1936. p. 25-28. Must have additional research on many subjects, among which following are of primary importance: 1. Improvements in construction detail, and development of technical information in this field. 2. Unit construction. Wooden houses now cost too much. We need to develop the field of unit construction so that we may properly and fairly compete with efforts being made in other industries in this line. Full scale tests need to be made of forms for wall, floor and roof units. Interlocking units which may be readily set up need to be developed. 3. Expensive solid lumber construction now in common use needs to be replaced by laminated arches and beams. Full-size tests of such beams are necessary, and their use should be encouraged as much as possible. This can only be done after we have necessary technical data. 4. Research in fire retardents. 5. Prevention of shrinkage. One method has been developed whereby shrinkage has been reduced 90 per cent, but wood so treated sweats and becomes moist, and consequently method is not usable. 6. Better methods of decay prevention. 7. Painting, moisture proofing, and glazing of wood. 8. Research in seasoning.

Miscellaneous.

How to view the science museum. By F. B. Jewett. Science. v. 83, no. 2146. February 14, 1936. p. 150-152. Discussion of the New York Museum of Science and Industry.

Miscellaneous. (Cont'd)

List of bulletins of the agricultural experiment stations for the calendar years 1933 and 1934. By Catherine E. Pennington. Washington, D.C. 1936. 81p. U.S. Department of Agriculture. Miscellaneous publication, no. 232.

Reorganization of Washington headquarters of the Forest Service. Science. v. 82, no. 2137. December 13, 1935. p. 564-565.

Mississippi River.

Straightening the Father of Waters. By George R. Clemens. Engineering News-Record. v. 116, no. 8. February 20, 1936. p. 269-276. In new Mississippi River plan twelve cutoffs have been made between Arkansas and Old Rivers, shortening channel over hundred miles, and lowering river stages.

Painting.

House paint formulation for the South. By John F. Brocker. Paint Oil and Chemical Review. v. 98, no. 3. February 6, 1936. p. 22-25, 46.

Painting problems in the South. By Henry A. Gardner. Paint, Oil and Chemical Review. v. 98, no. 3. February 6, 1936. p. 12, 14, 16. Gives recommendations on mildew prevention.

Poultry Houses and Equipment.

Poultry houses. By H. L. Richardson. 1936. 16p. Maine. College of Agriculture. Extension Service. Bulletin no. 218.

Washington colony brooder house. 1935. 4p. Washington state college. Extension service. Poultry pointers no. 24.

Power Projects.

Cost of Bonneville power to Northwestern communities. Engineering News-Record. v. 116, no. 9. February 27, 1936. p. 312-313. Use of existing facilities favored by Oregon State Planning Board in survey of probable cost of generating and distributing Bonneville power to various communities. TVA plan of allocating distribution cost held undesirable.

Pumps and Pumping.

Picking out your pump. By W.E. Code. Western Farm Life. v. 37, no.8. August 15, 1935. p. 6. When considering selection of pump for irrigation well, it is found that all are practically limited to centrifugal type, including three main classes. There is horizontal centrifugal in which drive shaft is in the vertical; and turbine, whose shaft is also vertical. Propeller pumps are used to limited extent for special conditions. Horizontal pump is least costly and simplest.

Pumps & Pumping. (Cont'd)

Old-style vertical centrifugal is fast being eliminated from competition among pumps. It never was very satisfactory pump as ordinarily installed on timber frame. Important thing about centrifugal pumps is that they must fit conditions to which they are applied. It is particularly important that operating costs be known in advance when pump is to be operated at fixed speed, as by direct connected electric motor.

Rain and Rainfall.

Rainfall records for planning storm sewers. Public Works. v.66, no. 12. December, 1935. p. 20-22. Based on study of twenty-eight thousand records of storms during thirty-three years.

Refrigerants.

Properties of refrigerants. Cold Storage & Produce Review. v. 39, no. 454. January 16, 1936. p. 7-8.

Refrigeration.

Factors influencing the refrigeration of packages of peaches. By J.W. Lloyd and S.W. Decker. 1935. 439-464p. Illinois. Agricultural experiment station. Bulletin no. 418.

Refrigeration of oranges in transit from California. By C.W. Mann and William C. Cooper. Washington, D.C., 1936. 88p. U.S. Department of Agriculture. Technical bulletin no. 505.

Research.

Federal budget includes more money for science. Science News Letter. v. 29, no. 772. January 25, 1936. p. 60.

1935 record of research. Heating & Ventilating. v. 33, no. 1. January, 1936. p. 68-70. Trade Association research. Private institutes. Colleges and Universities. Government Bureaus.

Research - the yeast in the loaf of agriculture. By A.A. Wallace. 1936. p. 5-29. Reprinted from Scientific Monthly, January 1936.

Research funds to find uses for farm products. Science News Letter. v. 29, no. 772. January 25, 1936. p. 60-61. One grouping of projects brings together work of present Color Laboratory at Arlington, Va., researches now in progress at Ames, Iowa, and certain work hitherto under Agricultural Chemical appropriation, under general head of industrial utilization of farm products and by-products. In this new grouping are included research on tanning and tanning materials, aimed, among other things, to find suitable substitutes for tanning extracts formerly obtained from now blight-exterminated chestnut trees. Uses of wastes and semi-wastes like straw and cornstalks for paper pulp is one line of work being carried on. Research on production of direct consumption cane sugar in continental United States and on

Research. (Cont'd)

standardization of quality of sugar-cane syrup is booked to receive a $10,000 increase. Means for preventing farm fires is also in for a $10,000 boost, and a $10,000 increase is listed for research on the chemistry and physics of soils.

Various results of being researchful. By Edward R. Weidlein. Science. v. 82, no. 2137. December 13, 1935. p. 553-562.

Reservoirs.

Formula for capacities of reservoirs. By G. C. Dobson. Soil Conservation. v. 1, no. 7. February, 1936. p. 7-9.

Resettlement.

Resettlement: its job. Nation's Agriculture. v. 11, no. 5. February, 1936. p. 6-7, 21.

Run-off.

Run-off records from D. of A. demonstration projects. Public Works. v. 66, no. 11. November, 1936. p. 21. On these projects, terracing, strip cropping, contour farming, log and masonry dams in gullies, and land in grass and timber are used.

Sewage Gas.

Engines run on sludge gas. Power. v. 80, no. 3. March, 1936. p. 120-122. High reliability, low maintenance and self-payment within a year are outstanding characteristics of gas engines in sewage disposal.

Silos.

Constructing trench silo. Pacific Rural Press. v. 130, no. 25. December 21, 1935. p. 648.

Steel corn crib. Grain & Feed Journals. v. 76, no. 1. January 8, 1936. p. 17. Steel framework is tied solidly together with rigid cross-members, and to this frame is bolted 22 gauge corrugated, galvanized steel wall sheets. Roof sections are flat, but so fastened together as to shed inclement weather, and at three points on one slope are removable sections through which crib may be filled completely. Roof and walls, even bolts are small parts, are covered with heavy coating of hot spelter galvanized to insure long life. Crib is 37½ feet long, 12 feet 4 inches wide, has rounded ends and sets on concrete foundation. At top of steel structure are four ventilators that swing to catch any available breeze and keep constant draft passing through contents of crib.

Silt.

Silt theory of flow of water. By Radha Krishna Khanna. Rajar, District Gujrat, Punjab irrigation, 1935. 50 p.

Soil Conservation.

Conservation of public lands. Science. v. 83, no. 2148. February 28, 1936. p. 204-205. Without some method of government control which will insure stockmen use of grazing lands for continuous period sufficient to make it to their advantage to improve and protect range, there can be little hope that any extensive improvements will be made. On contrary, present devastation and destruction will probably increase until grazing lands are hopelessly destroyed. While loss to country in forage each year may be approximately determined, loss to country as a whole, and its future development and prosperity can not be estimated.

Conserving our soil resources. By J. C. Hogenson. Utah Farmer. v. 56, no. 13. February 10, 1936. p. 6, 15. Wise farmer aims to develop at least seven things which comprise important factors of soil fertility, and soil fertility means ability of soil to produce economically a good crop. 1. To develop and maintain proper structure and texture of soil; to maintain good tilth. 2. To establish and maintain in soil right amount of moisture; to control and conserve soil moisture. 3. To develop and maintain in soil right amount of organic matter; to develop and conserve humus. 4. To develop and maintain in soil right amount and quality to dissolved salts; to regulate and conserve dissolved plant foods in soil. 5. To regulate amount and movement of air in soil; to control soil ventilation. 6. To establish and maintain proper relation between temperature of soil and of air; to control soil temperature. 7. To maintain right kind of bacteria in soil.

Soil health and national wealth: How the AAA programs bring better use of farm land. Washington, D. C., 1935. 35p. Mimeographed. U.S. Agricultural Adjustment Administration. Shows relationship between farm income and soil conservation practice, and many ways in which farmers long had used their adjustment programs to improve soil fertility and protect their lands against erosion.

What America's soil conservation program requires of the engineer. By F. A. Fisher. Agricultural Engineering. v. 17, no. 2. February, 1936. p. 45-46, 54. Purpose of agricultural engineering work in soil conservation program is, from farmer's standpoint, to stabilize and preserve soil for crop production purposes. Agricultural engineer in soil conservation work must, above everything else, be man of vision with open mind who is able and willing to grasp new ideas and apply them in practical manner to problem at hand.

Soil Testing.

Soils laboratory device for determining consolidation. Engineering News-Record. v. 116, no. 9. February 27, 1936. p. 324-325. Letter from Willkam P. Kimball. Description of apparatus which has been built at Thayer School of Civil Engineering, Dartmouth College, during past two years.

Soils.

Chemical and physical properties of dry-land soils and of their colloids. By Irvin C. Brown and Horace G. Byers. Washington, D.C. 1935. 56p. U.S. Department of Agriculture. Technical bulletin no. 502.

Soil fertility, the foundation to permanent agriculture. By J.C. Hogenson. Utah Farmer. v. 56, no. 14. February 25, 1936. p.3.

Take soil samples in scientific manner. Oregon Farmer. v. 59, no. 3. February 6, 1936. p. 13. Directions for taking soil samples to be sent to experiment station at Corvallis. 1. Take sample from open field and avoid paths, gopher holes, etc. 2. Select average spot, pull up growing plants on it, brush aside half decayed vegetable matter, and bore or dig vertical hole to depth of eight inches. Get samples to this depth from several places in field; mix these samples well on piece of cloth or stout paper, dry mixed sample, put quart in clean canvas bag or box and label carefully. 3. In same manner get average of subsoil, taken below surface sample, to depth of approximately three feet. Place in separate bag and label. 4. Dig or bore to depth of six feet and if hardpan or other peculiarity in structure is noted, send sample properly labelled. If solid rock is found state at what average depth. 5. Send "description of land" giving as complete history of field as possible, name of nearest town, probable selling price of land, elevation above nearest river, directions and grade of slopes, drainage, how long cropped, by what crops or fruits, what yields, what fertilizers have been applied, and any peculiarities which may have bearing on agricultural qualities of soil. 6. State township, range and section number of land from which these samples are taken. 7. Do not fail to label samples carefully, placing name of sender on each sample wrapper.

Solar Heating.

Solar energy now caught with 15 per cent efficiency. Science News Letter. v. 29, no. 770. January 11, 1936. p. 23. New solar plant is simple and inexpensive to build. Uses parabolic aluminum alloy mirrors which stay bright and untarnished. These focus rays upon dark opaque liquid that absorbs heat and is thus raised to temperature of 350 degrees. This sun-fired boiler could provide steam to run engine that would generate electricity.

Spray Removal.

Queer washer improves looks of fruit. Popular Mechanics. v. 64, no.6. December, 1935. p. 891. Flood-type washer contains brushes which help to remove dirt, insects and poison spray used to protect fruit. Brushes provide gentle scrubbing action that cleans all exposed surfaces. Emptied into receiving hopper, fruit passes through wash solution, rinse tank, then over drying section, and from there to grader or packaging machine.

Sprays and Spraying Equipment.

Rate of wear of spray-gun disks. By O. C. French. Agricultural Engineering. v. 17, no. 2. February, 1936. p. 67, 88.

Steam Tables.

Table of saturated steam temperatures. By Fred J. Wiegand. Power Plant Engineering. v. 40, no. 3. March, 1936. p. 171.

Stream Flow.

Measuring Ohio's rivers. By C. V. Youngquist. Engineering Experiment Station News. v. 8, no. 1. February, 1936. p. 18-19. IX. Ohio State University. Stream flow during the water year 1935.

Surveying.

Azimuths from plane coordinates. By Oscar S. Adams. Washington, D.C., 1936. 14p. U.S. Coast and Geodetic Survey. Serial no. 584.

Temperatures.

Pond cooling by surface evaporation. By D.O. Lima. Power. v. 80, no. 3. March, 1936. p. 142-144. Analysis of data from many central stations which permits prediction of lake temperatures within 5 degrees under given conditions.

Tennessee Valley.

Tennessee Valley activities today. By S. T. Henry. Engineering News-Record. v. 116, no. 7. February 13, 1936. p. 238-239. Regional development work ranging from flood control and navigation improvement to agricultural and forest development is TVA's fundamental problem, largely overlooked because of power controversies.

Terracing.

Rain that once ran away now creeps off terraces. Utah Farmer. v.56, no. 14. February 25, 1936. p.12. Runoff has been retarded. More moisture has been retained. In general, soil is in better condition than for years.

Size of terracing equipment. By N.W. Wilson and M.L. Nichols. Agricultural Engineering. v. 17, no. 2. February, 1936. p. 55-62.

Terracing and maintenance. By W.A. Steele. Farm Machinery and Equipment. No. 1825. January 15, 1936. p. 28, 30. Made easy by low cost and efficiency of individual farm outfits. Interesting figures on some recent demonstrations.

Terracing. (Cont'd)

Terracing machinery and terrace construction practices: A symposium. Agricultural Engineering. v. 17, no. 2. February, 1936. p. 47-54. In the Southwest area. By Ralph W. Baird. In the Corn Belt area. By V.D. Young. In the Great Plains area. By Raymond R. Drake. In the Pacific Northwest area. By P.C. McGrew. Factors affecting terracing costs. By C.F. Hoover. Problems in determining terracing costs. By W.A. Clegg. Types of machines and selling policies. By J.W. Carpenter, Jr.

Thermostats.

Comparative study of combustion results with various thermostats. By Burton E. Shaw. Heating, Piping & Air Conditioning. v. 8, no.3. March, 1936. p.157-167. Correlates results obtained on various thermostats mentioned in order to compare effect of thermostate design, operation, and location on various factors affecting fluc gas loss, oil consumption, off-period stack loss, and most important factor of all - physiological comfort. Reports upon effect on oil consumption of lowering thermostate setting during night.

Tires.

Farm wheels put on rubbers. By F. Hal Higgins. California Cultivator. v. 83, no. 2. January 18, 1936. p. 50-51.

More than half of new tractors on rubber tires. Implement & Tractor. v. 51, no. 4. February 22, 1936. p. 12-13.

Power on rubber. By Neil M. Clark. Country Gentleman. v. 106, no. 3. March 1936. p. 12-13, 92-93.

Rubber tires for farm work. Farm Machinery & Equipment. no. 1825. January 15, 1936. p.20, 22. Firestone solves farm traction problem by developing new "ground grip" tire. Predicts use on all types of farm machinery.

Tires grow tougher and tougher. Nebraska Farmer. v. 78, no. 4. February 15, 1936. p. 28, 31.

When is a truck tire overloaded? By J.E. Hale. S.A.E. Journal. v.38, no. 1. January, 1936. p. 25-39. Lengthy consideration is given to tire overloading, with understanding that overloading as referred to in tire failures is quite different from application of term overload to structural materials which collapse under a reasonably well-defined excess of load. While this paper deals primarily with overloading, there are so many other aspects relating to use of truck-bus tires affecting industry that discussion is included of various other phases of tire business intended to be instructive along line of longer life and greater freedom from trouble. Increasing varieties of service in which motor-vehicles are being placed demand different types and characteristics of tires, which are outlined. Then there is discussion of relative merits of balloon type versus high-pressure type tires. Choice of tires for new trucks and buses is covered in

Tires. (Cont'd)

practical way and also there is section outlining variations of basis for determining loads and air-pressure recommendations. For truck operator's benefit, there is included a section as to what operators should know and practice to get most out of tires, discussing importance of inflation, dual mating, wheel alignment, repairs and retreading on both tires and inner tubes.

Tractors.

Better practices in servicing farm tractors. By J. B. Torrance. Northwest Farmer. v. 4, no. 11. March, 1936. p. 11. Lubrication. Bearings. Carburetion. Air cleaners.

Cost of tractor operation. By John W. Carncross. New Jersey Agriculture. v. 18, no. 2. March-April, 1936. p. 2.

Essential steps in servicing tractor engine valves. By Frank J. Zink. Implement & Tractor. v. 51, no. 3. February 8, 1936. p. 32-33.

Garden tractors in the United States. By A.A. Stone. Market Growers Journal. v.58, no.4. February 15, 1936. p. 98-99, 101, 103.

International Harvester diesel. Farm Implement News. v.57, no.5. February 27, 1936. p.32-34.

Ventilation.

Fundamental factors in design of exhaust systems. By Theodore Hatch. Mechanical Engineering. v.58, no.2. February, 1936. p. 109-113.

Waste Disposal.

Field tests show feasibility of home disposal of wastes. By Morris M. Cohn. Municipal Sanitation. v.7, no.3. March, 1936. p.80-85. Food waste grinding units undergo year's test in homes of fourteen sanitary engineers; results encouraging.

Water Heating.

Kitchen needs hot water. Idaho Farmer. v.53, no. 26. December 26, 1935. p. 7. Fairly simple installation will provide home supply.

Water Supply.

Little Waters: Study of headwater streams and other little waters, their use and relations to the land. By H.S. Person. Washington, D.C., 1935. 82p. Report initiated by Soil Conservation Service, Resettlement Administration and Rural Electrification Administration.

Weather.

Adverse weather grips country. Engineering News-Record. v. 116, no. 9. February 27, 1936. p. 331. Usual cold weather with heavy ice and snow blanket causes apprehension of spring floods if heavy rains come next month; most of country suffers in continued cold wave.

Wire Rope.

Wire rope - Design, construction and lubrication. Lubrication. v. 22, no. 2. February, 1936. p. 12-21.

Wood.

Availability of wood as an engineering material. By John M. Monte. Engineering Experiment News, Ohio State University. v. 8, no.1. February, 1936. p. 20-23. Two weak points physically in wood as material are (1) variability of its moisture content not only as between different woods but also between woods from different parts of same tree, and (2) variability in physical characteristics of woods from different species of trees all classed as wood by general public, yet radically different in many important characteristics.

Wood Preservation.

Termite problem, and what to do. By Donald L. Kieffer. Pacific Rural Press. v.130, no.21. November 23, 1935. p.526.